TAKING STOCK

North American Pollutant Releases and Transfers 1996

COMMISSION FOR ENVIRONMENTAL COOPERATION

1999

Disclaimer

The National Pollutant Release Inventory (NPRI) and the Toxics Release Inventory (TRI) data sets are constantly evolving, as facilities revise previous submissions to correct reporting errors or make other changes. For this reason, both Canada and the United States "lock" their data sets on a specific date and use this "locked" data set for annual summary reports. Each year, both countries issue revised databases that cover all reporting years.

The CEC follows a similar process. For the purposes of this report, the TRI data set of April 1998 and the NPRI data set of July 1998 were used. The CEC is aware that changes have occurred to both data sets for the reporting year 1996 since this time that are not reflected in this report. These changes will be reflected in the next report, which will summarize the 1997 data and make year-to-year comparisons with previous years' data.

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Preface

Pollutant release and transfer registers (PRTRs) can provide important information on pollution management in a country and thus assist policymakers, industry and communities to set priorities and implement appropriate action. As the movement to establish PRTRs gains momentum globally, the North American countries are proud to be in the forefront of those that recognize the value of widespread dissemination of such information.

North Americans are fortunate that the Canadian and United States PRTR systems possess sufficient commonality to make comparative data gathering and analyses possible. This is because the two systems cover releases and transfers to all environmental media, require reporting on individual chemicals, collect data according to comparable industrial classifications, and cover at least the manufacturing sector as a reporting base. At the same time, it is also important to note that industrial facilities are not the only important sources of pollution. Sources that are not covered by the North American PRTRs include agriculture, transportation and small and medium-size enterprises. The information in this report provides us with part of the picture and encourages industry, communities and government to begin to assess their progress on a continental scale—a trend that will receive further impetus as the developing Mexican PRTR system begins to yield data.

This volume is the third such annual report in the Commission for Environmental Cooperation's (CEC) ongoing *Taking Stock* series, providing information on and comparing the North American PRTRs. As before, readers will notice significant changes in the latest report: analyses have been expanded and there is more discussion of the data context, of carcinogenic releases and transfers, and of metals. The CEC is committed to continually improving the *Taking Stock* report and making the North American pollutant data accessible and useful to more people. We can also expect to see further improvements in coming years as the US and Canadian PRTRs achieve more homogenous industrial coverage, particularly beginning with the 1998 reporting year, and as data from the developing Mexican PRTR system become available.

Officials from Environment Canada, INE and EPA have provided assistance and support vital to the development of this report. This past year we have worked with the following officials from these agencies: Canada—Steve McCauley, François Lavallée and Andy Bowcott; Mexico—Luis Sánchez and Arturo Morales; USA—Susan Hazen and John Harman.

The CEC would also like to thank the consultants who worked on the *Taking Stock* report: Hampshire Research Associates (USA)—Catherine Miller and Warren Muir, as well as Sharon Martin, John Howay and John Young; Environmental Economics International (Canada)—Sarah Rang; and Corporación Radian, S.A. de C.V. (Mexico)—José Antonio Ortega and Raphael Ramos.

I would also like to thank Lisa Nichols, CEC Program Manager for Technical Cooperation, for her efforts overseeing the CEC PRTR Program, and the CEC Publications staff for their efforts in bringing this volume to fruition.

Janine Ferretti
Executive Director

Executive Summary

North Americans are concerned about the effect of chemicals on their health, neighborhood and environment. Pollutant release and transfer registers (PRTRs) provide information on the amounts and types of chemicals being released into the air, land and water and transferred offsite from industrial facilities in North America.

The Commission for Environmental Cooperation (CEC) recognizes the importance of PRTRs, such as the Toxics Release Inventory in the United States, the National Pollutant Release Inventory in Canada, and the developing *Registro de Emisiones y Transferencia de Contaminantes* (RETC) in Mexico, for their potential to enhance the quality of the North American environment. This report, *Taking Stock 1996*, is the third of the CEC's annual studies of these programs and comparison of their data. It analyzes 1996 publicly available data from TRI and NPRI, compares 1995 and 1996 data and provides updates from the developing RETC program. As Mexico's RETC data become available, these will be incorporated into future *Taking Stock* reports.

The PRTR data used as the basis of the *Taking Stock* report do not account for all sources of releases and transfers or all chemicals. Many sources of chemical releases—small sources such as dry cleaners, gasoline service stations, mobile sources such as cars and trucks, area sources such as farms and natural sources such as volcanoes—are not included in PRTR data and hence are not within the purview of the *Taking Stock* report. Likewise, small manufacturing companies which employee fewer than 10 employees or fall below the processing, manufactured or "otherwise used" thresholds are also not required to report to PRTRs. A limited number of chemicals are required to be reported to TRI (606) and NPRI (178)—far fewer than the tens of thousands estimated to be used in commerce. So while PRTR data can provide important information on releases and transfers of chemicals, this information needs to be seen as part of a larger pollution picture.

The report analyses the 165 chemicals and facilities in the industrial manufacturing sectors (US SIC codes 20 to 39) which are common to both TRI and NPRI data. This matched data set represents 60 percent of the total releases and transfers reported to the full NPRI database and 82 percent of those for TRI.

In the matched data set, over 1.23 billion kilograms of chemicals were released and transferred in North America in 1996. Releases were about two and one-half times larger than transfers in 1996 and, as in previous years, the largest releases occurred to air (**Figure 4–1**).

The United States, with 14 times the number of facilities reporting, continues to release and transfer more chemicals than Canada, contributing 90 percent of the North American total. Canada however, contributes more releases and transfers than would be expected given its size: with 7 percent of the facilities and forms, NPRI releases and transfers are 10 percent of the total matched database.

More than one-quarter of all North American releases in the matched data set come from four states and provinces: Texas, Louisiana, Ohio and Ontario. The same four areas also accounted for one-quarter of total releases and transfers, but in different rank order: Texas, Ontario, Louisiana, and Ohio (**Map 4–1** and **4–2**).

Among the more than 20,000 reporting facilities in North America, the 50 with the largest on-site releases contributed almost one-third of the total releases in North America. These facilities injected and released to land over 70 percent of the North American totals (**Figure 4–3**).

Not only are North American releases concentrated at a few facilities, a few chemicals account for most of the North American total. Five chemicals, methanol, zinc and its compounds, nitric acid and nitrate compounds, and toluene account for almost half of the total releases and transfers in North America (**Figure 4–7**).

One of every four forms submitted to TRI or NPRI was for a recognized or suspected carcinogen. This amounted to almost 189 million kilograms of carcinogens released or transferred in North America in 1996, about one-sixth of total North American releases and transfers for the year.

Two industrial sectors, the chemical industry and the primary metals industry, released or transferred larger amounts of chemicals than the other 19 industrial sectors combined. The chemical industry ranked first, releasing and transferring over 404 million kilograms, followed by the primary metals industry with 312 million kilograms.

Several differences, including off-site transfers and per form averages between TRI and NPRI, are explored in this report. Canadian facilities reported sending proportionately more (19 percent) matched chemicals off-site for disposal or containment than did US facilities (11 percent). On the other hand, Canadian facilities sent smaller quantities to sewage treatment plants than did US facilities (4 versus 8 percent).

NPRI facilities reported total releases and transfers per form that were one and one-half times larger than the average for TRI facilities. NPRI facilities averaged 28,881 kilograms of releases and transfers per form, while TRI averaged 19,019 kg per form. Larger average releases and transfers per form for NPRI facilities were seen in air releases (1.7 times larger per form in NPRI), transfers to treatment/destruction (1.6 times larger) and transfers to disposal/containment (2.5 times larger). For other types of releases, including releases to water, underground injection, land, and for transfers to sewage treatment plants, NPRI facilities reported slightly smaller average amounts than TRI facilities. Differences in reporting thresholds, chemical use or activity or industrial mix between NPRI and TRI were found not to account for the NPRI's larger average releases and transfers per form.

Analysis of changes in releases and transfers in NPRI and TRI over time highlight individual facilities, industrial sectors, or states and provinces reporting lower or higher releases and transfers.

Total releases and transfers reported to both NPRI and TRI decreased from 1995 to 1996. NPRI showed a 5 percent reduction, which is notable given the increased number of facilities and forms from 1995 to 1996. TRI showed a 2 percent reduction with decreasing number of facilities and forms. When total releases and transfers are separated, releases to both NPRI and TRI showed decreases (11 percent decrease for NPRI and 4 percent decrease for TRI). Transfers to both NPRI and TRI increased from 1995 to 1996 (10 percent for NPRI and 3 percent for TRI, see **Figure 6–1**).

Facilities also project their expected releases and transfers into the future in both systems. Both NPRI and TRI are projecting modest reductions in releases and transfers through 1998, with an 8 percent decrease for NPRI and a 6 percent decrease for TRI.

Pollution crosses boundaries. In 1996, TRI facilities transferred 71 million kilograms of pollutants out of the United States, with Canada being the main receiver (55 percent) closely followed by Mexico (42 percent). Most of the US transfers to Canada went to Ontario (30 million kilograms) and Quebec (10 million kilograms). Most of the US transfers to Mexico went to the city of Monterrey (29 million kilograms).

Facilities in Canada transferred about half the amount of chemicals (32 million kilograms) outside of Canada that US facilities did. Almost 99 percent of Canadian transfers went to the United States, primarily to sites in Ohio (10 million kilograms) and Michigan (9 million kilograms). Reporting of transfers to recycling and energy recovery is voluntary in NPRI for 1996, so these numbers are lower estimates of actual quantities.

Transfers to treatment/destruction and disposal/containment must be reported in both TRI and NPRI. If just these two categories of transfers are compared, then US facilities sent half the amount of transfers that Canadian facilities did (2 million versus 4 million kg). Most of the transfers occurs at the Ontario-Michigan border.

The border area—100 kilometers on either side of the Canadian-US border—contains 74 percent of NPRI facilities and 19 percent of TRI facilities. Overall, the border area is dominated by the Great Lakes region; here TRI facilities reported 70 percent of the total releases and transfers for the region. In the Eastern region, the opposite pattern occurred, with NPRI facilities reporting 87 percent of all releases and transfers for that region.

Communities across North American have created a number of tools that use PRTR data to increase understanding of releases and transfers, to reduce them, and to build a regional picture. These tools include community advisory panels, good neighbor agreements, new web sites, briefing books and company mentoring. A separate chapter (**Chapter 9**) describes several specific examples of the development and use of such tools.

Acronym	Meaning
ACCE	Allen County Citizens for the Environment (in Lima, Ohio, United States)
ARET	Accelerated Reduction/Elimination of Toxics
BP	British Petroleum Company
CAP	Community advisory panel
CEC	Commission for Environmental Cooperation
CIESAS	*Centro de Investigaciones y Estudios Superiores en Antropología Social* (Center for Research and Further Study of Social Anthropology)
CMAP	*Clasificación Mexicana de Actividades y Productos* (Mexican Activities and Products Classification)
COA	*Cédula de Operación Anual* (Annual Certificate of Operation: replaces the former *Cédula de Operación para Establecimientos Industriales de Jurisdicción Federal*)
EDF	Environmental Defense Fund
EMS	Environmental management system
EPA	US Environmental Protection Agency
IARC	International Agency for Research on Cancer
INE	*Instituto Nacional de Ecología* (Mexican National Institute of Ecology)
INEGI	*Instituto Nacional de Estadística Geografía e Informática* (Mexican National Instutute of Geographical and Information Statistics)
ISO	International Organization for Standardization
kg	kilograms
LEAN	Louisiana Environmental Action Network (in the United States)
LGEEPA	*Ley General del Equilibrio Ecológico y la Protección al Ambiente* (General Law of Ecological Equilibrium and Environmental Protection)
NAAEC	North American Agreement on Environmental Cooperation
NAFTA	North American Free Trade Agreement
NAICS	North American Industry Classification System
NGO	Nongovernmental organization
NPRI	National Pollutant Release Inventory (PRTR for Canada)
NTP	US National Toxicological Program
OSHA	US Occupational Safety and Health Administration

PBT	Persistent bioaccumulative toxicant
PCS	US Permit Compliance System
POTW	US publicly owned treatment works
PRTR	Pollutant release and transfer register
RCRA	US Resource Conservation and Recovery Act
RETC	*Registro de Emisiones y Transferencia de Contaminantes* (PRTR for Mexico)
Semarnap	*Secretaría de Medio Ambiente, Recursos Naturales y Pesca* (Mexican Secretariat of the Environment, Natural Resources and Fisheries)
SIC	Standard Industrial Classification
SIDS	Screening information data set
SVP	*Societé pour Vaincre la Pollution* (Society to End Pollution, in Quebec)
TRI	Toxics Release Inventory (PRTR for US)
UNEP	United Nations Environment Programme
UNITAR	United Nations Institute for Training and Research
VOC	Volatile organic compound

33/50 Program
A voluntary program of the US EPA encouraging reductions of TRI releases and transfers of 17 chemicals by 33 percent from 1988 to 1992 and by 50 percent from 1988 to 1995 through pollution prevention and other means.

Carcinogens
The International Agency for Research on Cancer <http://www.iarc.fr> and the US National Toxicological Program <http://ntp-server.niehs.nih.gov> evaluate chemical substances for their cancer-causing potential. Forty-five chemicals in the matched data set have been designated as known or suspect carcinogens by one or both agencies.

Census Divisions (Canadian) and Counties (US)
Census divisions in Canada are designated by provincial law or, in the absence of provincial action, by Statistics Canada. They represent counties, regional districts, regional municipalities and united counties. There are 288 census divisions. US states are divided into counties (called parishes in the state of Louisiana) or, in a few cases, county equivalents such as townships in some New England states and independent cities in some states, such as Virginia. There are 3,141 US counties, including the District of Columbia.

Chemical category
A group of closely related individual chemicals that are counted together for purposes of PRTR reporting thresholds and release and transfer calculations. The chemicals are reported to the PRTRs under a single name.

Counties (US)
See Census Divisions and Counties.

Destruction
A variety of processes that change the chemical in waste into another substance. Destruction also includes physical or mechanical processes that reduce the environmental impact of the waste. This is the term used in the NPRI report of 1993 data to summarize chemical, physical, biological treatment and incineration. (See "treatment" as the term used to cover these activities in the TRI summary reports.)

Energy recovery
The combustion or burning of a wastestream to produce heat.

Environmental management hierarchy
The types of waste management plus source reduction, prioritized as to environmental desirability. In order of preference, the one most beneficial to the environment is source reduction (pollution prevention at the source), followed by recycling, energy recovery, treatment, and finally disposal as the least desirable option.

Fugitive emissions
Air emissions that are not released through stacks, vents, ducts, pipes, or any other confined air stream. Examples are equipment leaks or evaporation from surface impoundments.

Incineration
A method of treating solid, liquid or gaseous wastes by burning.

Nonproduction-related waste
Waste that is generated as a one-time event, including large accidental spills, waste from a remedial action to clean up the environmental contamination from past disposal practices, or other wastes not occurring as a routine part of production operations. This does not include spills that occur as a routine part of the production operations that could be reduced or eliminated by improved handling, loading or unloading procedures.

Off-site transfers
Chemicals in waste that are moved off the grounds of the facility, including transfers of waste sent to other facilities or other locations, such as hazardous waste treatment facilities, municipal sewage treatment plants or landfills.

On-site
A substance, process or transfer occurring within the boundaries of the reporting facility, including areas where wastes may be stored. This may involve treatment or disposal separate from the production processes but must be within facility boundaries.

Otherwise used
Any use of a chemical that is not manufacturing or processing, such as use as a manufacturing or a chemical processing aid or an ancillary use during the production process.

Point source
The origin of known or deliberate environmental releases from fixed points, such as smokestacks and wastewater discharge pipes.

Processing use
The use of a chemical as part of a chemical or physical process, including as a reactant, in processing a mixture or formulation, or as an article component.

Production ratio/activity index
The ratio of the production level associated with the chemical in the current reporting year to the previous year's level.

Production-related waste
A term used by the US EPA to denote chemical waste generated as a result of routine production that could potentially be reduced or eliminated by improved handling, more efficient processes, change of product or in product quality, or change in raw materials. This does not include spills resulting from large-scale accidents, or waste from remedial actions to clean up contamination. As used by the US EPA, it includes chemicals released, sent off-site for disposal, recycling and energy recovery, and recycled or used for energy recovery on-site.

Recycling
Extraction of a chemical from a manufacturing process stream that would otherwise have been treated as waste, with the extracted chemical being reused in the original production process, in another production process, or sold as a separate product.

Releases
Chemicals in waste released on-site to air, water, underground injection, or land.

Source reduction
A strategy for reduction of pollution that involves preventing the generation of waste in the first place, rather than cleaning it up, treating it, or recycling it after it has been produced.

Source reduction activity
The types of activities undertaken to accomplish source reduction. The term includes equipment or technology modifications, process or procedure modifications, reformulations or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

Tonne
A metric ton, equaling 1,000 kilograms, 1.1023 short tons or 0.9842 long tons.

Transfers
Chemicals in waste that are sent from the reporting facility to a facility that treats or disposes of the chemical. Transfers also include chemicals sent off-site for recycling and energy recovery under the TRI definition of transfers, but reporting of such transfers is optional under NPRI.

Treatment
A variety of processes that change the chemical in waste into another substance. Treatment also includes physical or mechanical processes that reduce the environmental impact of the waste. This is the term used in TRI reports to summarize chemical, physical, biological treatment and incineration. (See “destruction” as the term used to cover these activities in NPRI.)

Waste
The amount of the chemical that does not become a product and is not consumed or transformed during the production process. PRTRs differ as to whether material destined for recycling, reuse, or energy recovery are included or not included in their definition of waste.

1 Introduction

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North Americans are concerned about the effect of chemicals on their health, and environment. Many companies have responded with programs to prevent and reduce chemical releases and transfers, often in response to government programs mandating their identification and reduction. One such program, the pollutant release and transfer register (PRTR), is a cornerstone to these efforts. PRTRs are designed to track the quantities of substances of concern that are released into the air, water or land. Results are fed into a national, publicly available database, allowing information on these substances to be made available quickly to the public.

The Commission for Environmental Cooperation (CEC) recognizes the importance of these pollutant release and transfer registers—such as the Toxics Release Inventory (TRI) in the United States, the National Pollutant Release Inventory (NPRI) in Canada and the *Registro de Emisiones y Transferencia de Contaminantes* (RETC) now being implemented in Mexico—for their potential to enhance the quality of the North American environment. The CEC, mandated under the terms of the North American Agreement on Environmental Cooperation, facilitates cooperation and public participation in fostering the conservation, protection and enhancement of the North American environment for the benefit of present and future generations, in the context of increasing economic, trade and social links between Canada, the United States and Mexico.

At the Second Annual Regular Session of the CEC in 1995, the Environment Ministers of the three North American countries (the Council) noted in the Communiqué:

> *This past year, the NAFTA partners began to examine their common need for an inventory of polluting emissions. We have decided to create a North American Pollutant Release Inventory that will bring together, for the first time, existing national public information about emissions and long-range transportation of pollutants. This vital tool for improving the quality of the environment will be the result of harmonized methods of reporting on pollutant emissions of mutual concern.*

At the Third Annual Regular Session in Toronto, Canada (August 1996) the Ministers noted in the Communiqué:

> *The Council announced that the intention to produce the first annual North American Pollutant Release Inventory (NAPRI) will be published…as part of an effort to provide the public with information on pollutant sources and risks. This inventory will bring together for the first time existing national public information from the three countries about emissions. In the long run, the NAPRI will help improve the quality of the environment by providing the public with information to assess North American pollutant sources and risks. It also serves as a model for similar efforts in other parts of the world because North America represents the largest landmass ever to be subjected to compatible methods of reporting on pollutant emissions of mutual concern.*

At the Fourth Annual Regular Session of the CEC in Pittsburgh, Pennsylvania, USA (June 1997), the Ministers passed Resolution 97-04 "Promoting Comparability of Pollutant Release and Transfer Registers (PRTRs)." This resolution commits the three governments to work toward adopting more comparable PRTRs, to collaborate on the development of an Internet site to present a matched subset of data from the three North American PRTRs, as well as to cooperate with the CEC in the preparation of the annual CEC North American PRTR report. While recognizing that a higher degree of comparability among the PRTRs is desirable, the resolution specifically notes that each national PRTR program has developed a unique process for the collection and manipulation of environmental data sets.

1.1 What Are Pollutant Release and Transfer Registers?

Pollutant release and transfer registers like TRI and NPRI provide detailed data on types, locations and amounts of substances of concern released on-site and transferred off-site by industrial facilities. The federal governments then provide annual reports that are released to the public; the database is also made publicly accessible. Many corporations also use the data to report on their environmental performance. PRTRs are a new and innovative tool that can be used for a variety of purposes.

Tracking environmental substances of concern through pollutant release and transfer registers is essential to:

- enhance environmental quality;
- increase public and industry understanding of the types and quantities of substances of concern released into the environment and transferred off-site as waste;
- encourage industry to prevent pollution, reduce waste generation, decrease releases and transfers and assume responsibility for chemical use;
- track environmental progress; and
- assist governments in identifying priorities.

While there are many different environmental reporting databases, characteristic that all PRTRs share are:

- providing an overview of pollutant releases and transfers,
- reporting on individual chemicals,
- reporting by individual facilities,
- covering all environmental media,
- periodic reporting,
- defined and structured reporting,
- using computerized data management,
- limiting trade secrecy,
- indicating what is being held as a trade secret, and
- resulting in information actively disseminated to the public.

PRTRs are based on reports about individual pollutants because this is the only meaningful way to compare information on releases to air with those to water and land and with various off-site transfers. Such chemical-specific data may be supplemented with additional parameters that are relevant to only one environmental medium (e.g., biological oxygen demand for water, total particulates for air, and amount of spent solvent waste transferred for treatment).

Reporting by facility is key to locating where releases occur and who or what generated them. This allows interested persons and groups to identify local industrial sources for releases of substances of concern. It also supports regional and other geographically based analyses of the data. Facility-specific information may be supplemented with data about more diffused sources of such releases (the discussion of nonpoint sources in **Chapter 3**, **Section 3.3.2**, supplies one example).

Concerns about pollutants may arise in connection with any environmental medium. In addition, releases to one environmental medium may be transported to others. Volatile chemicals in water releases, for example, may vaporize into the air. Therefore, the reporting of releases and transfers to all environmental media is important.

To determine the status and trends of releases and transfers, reports must be made periodically and cover the same period of time for all facilities reporting.

The ability to compile, sort, rank, and otherwise analyze the data depends upon their structure. A clearly defined and highly structured database allows for a wide range of analyses.

Similarly, the ability to analyze quickly and easily a large number of reports on chemical releases and transfers depends upon the submissions being managed in a computer database.

Much of the power of a PRTR comes from the public disclosure of its contents. Active dissemination is important. For a PRTR to be effective, impediments to public availability of facility-specific information must be limited. In addition, users of a PRTR must know what types of data are being held back from disclosure (for instance, if a facility substituted a generic name for a substance emitted to air, obfuscating its chemical identity).

1.2 Integrating North American PRTR Data

Governments can use PRTR data to shift program priorities. New programs or enforcement measures can be tailored to accomplish specific goals, such as reducing specific substances or targeting releases in a particular region. Companies have responded to PRTR results by conducting an internal environmental review and setting goals for waste reduction.

The CEC wishes to assist citizens in understanding and using the existing data from North American PRTRs. Helpful information can be found in pollutant release and transfer reports from Canada and the United States. But these systems have important differences between them, so superficial comparisons can be very deceptive. (**Chapter 2** describes these differences and how this report accounts for them.) *Taking Stock 1996* attempts to increase the value of the national inventories by presenting an analysis of the types and amounts of releases and transfers of substances of concern across North America.

Taking Stock 1996 summarizes PRTR database on reports that industrial facilities filed for the 1996 operating year, the latest data available at the time this report was written. These PRTR reports were due to be submitted by the facilities during the summer of 1997. The US EPA released the TRI data to the public in a report dated May 1998 and Environment Canada released the NPRI data in July 1998.

1.3 Guide to *Taking Stock 1996*

The first chapters provide an overview of North American PRTR programs and their context and limitations. In addition, **Chapter 3** presents the data reported by facilities in Canada and in the US to their respective PRTRs. No nationwide reporting for 1996 was done by Mexican facilities. **Chapter 3** also demonstrates how a "matched" set of data was derived, compiling industries and chemicals that must be reported to the PRTRs of both Canada and the United States.

Chapter 4 analyzes this matched data from the two PRTRs and provides an overall summary of PRTR data for North America as reported for 1996. **Chapter 5** compares the data from the two PRTRs, again using the 1996 matched data set of common chemicals and industries, for each country individually. In **Chapter 6**, data for 1995 and 1996 from the matched dataset are compared for both countries.

Chapter 7 provides some special analyses using both the entire data from a PRTR, in order to illustrate some of the types of analyses that are specific to the different types of reporting under each PRTR, and the matched data. **Chapter 8** examines two cross-border issues: off-site transfers across national borders of the substances in wastes and releases and transfers from facilities located within 100 km of the Canadian-US border. **Chapter 9** presents case studies of several ways in which PRTR data are used at the local level by community groups to help in their understanding of local facilities.

2 Overview of Existing Programs in North America

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Both Canada and the United States have established the type of data to be collected under their PRTRs. The Canadian and US data are publicly available in the form of reports, and the entire database is electronically available. The Mexican PRTR program is underway, but awaiting further development. By consulting the Canadian or US databases, a person can quickly gather information on a facility's releases and transfers. The CEC's goals in producing this report include:

- providing an overview of North American pollutant releases and transfers that can give a better understanding of sources and the handling of industrial pollution;
- allowing national, state and provincial governments as well as industry and citizens to set priorities for pollution reduction;
- inviting reductions in North American pollutant releases and transfers through information comparison;
- assisting citizens in integrating and understanding the ramifications of North American PRTR data; and
- encouraging enhanced comparability of North American PRTR systems.

This chapter provides an overview of the existing PRTR systems in North America, including recent developments in all three countries, and supplies contacts for additional information.

2.1 Description of the Three North American PRTRs

The two inventories in Canada and the United States have many basic similarities since they stem from the same primary purpose—to provide publicly available information on a facility's releases and transfers to air, water and land. However, each inventory also has its unique aspects, which result from its historical development and special industrial characteristics of the country. The Mexican system has been initiated but awaits further development.

The first of the North American databases to be established was the Toxics Release Inventory (TRI) in the United States, which began collecting information for the year 1987. Canada's facilities first reported their releases and transfers to the National Pollutant Release Inventory (NPRI) for the year 1993. Mexico, in 1996, completed a successful case study demonstrating its proposed inventory. National implementation of this inventory, the *Registro de Emisiones y Transferencia de Contaminantes* (RETC), started in 1998 with data for the reporting year 1997.

2.1.1 Changes to the US TRI

For the 1996 reporting year, reporting on underground injection and releases to landfills changed in the details required, while the list of chemicals and industries required to report remained the same as for the 1995 reporting year. EPA also changed the way it presents TRI data to include transfers off-site to disposal in the "release" category. Beginning with the 1998 reporting year, seven industry groups not previously covered by TRI will begin reporting. Also, a "Chemical Right-to-Know" initiative was launched, which will provide basic

toxicity information on high production volume chemicals, over 200 of which are on the TRI list. Additional issues under discussion are additions and deletions to the TRI list of substances, lower reporting thresholds for persistent, bioaccumulative substances, and providing information on chemical use in TRI reporting.

Beginning with the 1996 reporting year, EPA has expanded TRI's collection of data on certain types of releases, underground wells and on-site landfills. For underground wells, the amounts sent to Class I wells are reported separately from those going to other wells. Class I wells are industrial, municipal and manufacturing wells where fluids are injected into deep, confined and isolated formations below potable water supplies. More than 99 percent of reported TRI releases to underground injection wells in 1996 went into Class I wells. Similarly, facilities separately report amounts released to RCRA Subtitle C landfills from amounts released to other on-site landfills. RCRA Subtitle C landfills are permitted to receive hazardous wastes under the US Resource Conservation and Recovery Act (RCRA). About one-quarter of the amounts of TRI substances disposed of in on-site landfills went to RCRA Subtitle C landfills in 1996.

The EPA presents its summary of the TRI reporting in an annual report. The 1996 TRI Public Data Release presented the TRI data in a new manner. Previously, releases and transfers were summarized as in the CEC report, that is, releases were composed of on-site releases, and transfers were all transfers off-site. Beginning with the 1996 TRI report, a category of "total releases" comprising on-site releases and off-site transfers to disposal was presented, along with off-site transfers for further waste management (which included transfers to treatment and to sewage). This change enables the public to obtain information on total releases separate from off-site transfers for further waste management activities, such as treatment or recycling. As a result, the change also corresponds more closely with the part of the TRI reporting form (called Section 8) that collects information on a facility's total waste generation and subsequent waste management activities, with separate data elements for total releases, amounts treated on-site and off-site, amounts recycled on-site and off-site, and amounts used for energy recovery on-site and on-site.

Beginning with the 1998 reporting year, several additional industrial sectors will be required to report to TRI. Currently, reporting is only required of manufacturing sectors. The added industrial sectors are metal mining, coal mining, electric utilities, commercial hazardous waste treatment, wholesale chemical product distributors, petroleum bulk stations, and solvent recovery services. With these, EPA has focused on industries that provide energy or raw materials to manufacturers (for example, mining) and those that receive or take away materials from the manufacturing sector (for example, petroleum bulk terminals). Because these industries already report to NPRI, the addition of these industry sectors will increase the amount of the data that is comparable between the two countries. EPA expects this will increase the number of facilities reporting to TRI by 30 percent.

Beginning with the 1997 reporting year, two chemicals have been deleted from the TRI list: 2-bromo-2-nitropropane (bronopol) and 2,6-dimethylphenol. Neither of these substances is on the NPRI or proposed RETC list. Other changes to the list of TRI chemicals include the possible addition of chemicals on which EPA deferred action when it added more than 250 substances in the 1995 reporting year.

Other developments under consideration include lower reporting thresholds for mercury, dioxin, and other persistent bioaccumulative toxicants (PBTs). EPA published a proposed rule lowering reporting thresholds for PBTs on 5 January 1999. The proposed rule sets three thresholds depending on the substances and their persistence and bioaccumulation properties. Dioxin and dioxin-like substances, produced on-site, would be added to the TRI list of substances with a threshold of 0.1 gram. Other PBTs would be reportable with a 10 or 100 pound (4.5 or 45 kilograms) threshold, depending on the persistence and bioaccumulation of each substance. In addition to PBTs already on the TRI list, EPA's proposed rule identifies other PBTs for addition to the TRI list. The current threshold for reporting a substance to TRI is 25,000 pounds (11.34 tonnes) if manufactured or processed and 10,000 pounds (4.54 tonnes) if otherwise used on-site. The proposed rule can be found online through the TRI site at <http://www.epa.gov/opptintr/tri> or directly at <http://www.epa.gov/fedrgstr/EPA-TRI/1999/January/Day-05/tri34835.htm>.

For Phase III expansion of TRI, EPA has proposed collecting data on chemical use, also referred to as materials accounting. These data would track the amounts of a listed chemical substance entering a facility, transformed into products and waste, and leaving the facility in products and waste. Similar data are currently collected by the states of New Jersey and Massachusetts. EPA has plans to further evaluate the issues, request comments and information on issues where additional assessment is needed, solicit actual assessments that have been performed using materials use data, and initiate public input concerning the development of regulations on this issue.

In April 1998, EPA announced a cooperative program with industry and environmental groups to collect more complete toxicity information on high production volume (HPV) chemicals. HPV chemicals are substances that are produced or imported in excess of 1 million pounds (453 tonnes) per year. A primary objective of this program is to make the toxicity information available to the public, especially through the Internet.

The voluntary program uses six internationally recognized testing protocols that together provide a basic picture of the toxicity of a chemical. Of the nearly 3,000 HPV chemicals in the United States, 203 are TRI chemicals. While only 7 percent of all HPV chemicals have the full complement of testing protocols, 55 percent of the TRI chemicals that are HPVs have the full set. Further information on the program can be found on the Internet at <http://www.epa.gov/chemrtk>.

2.1.2 Developments in Canada's NPRI

The 1996 data are the fourth set reported to NPRI. For that reporting year, Environment Canada made a few changes to the reporting requirements:

- the threshold pH for the nitrate ion in solution was changed from 6.5 to 6.0;
- the portion of pollutant released to each lake, river or stream must be reported, whereas previously only the total quantity of pollutant released to all water bodies was required;
- the portion of the pollutant transferred off-site to each receiving facility must be reported, whereas previously only the total quantity of pollutant transferred off-site to all receiving facilities was required.

The 1996 reporting requirements continue with a major change made for the 1995 NPRI data. In 1995 and subsequent NPRI databases, the weight of a by-product must be included in the calculation of the reporting threshold, regardless of the concentration of the by-product. Previously, such by-products with concentrations less than one percent were not included in the calculation of the reporting threshold. This change was made to capture large sources of some pollutants, which normally

generate pollutants in concentrations below one percent, such as aluminum smelters, utilities, and pulp and paper mills. The 1996 NPRI guidance manual clarifies that the by-product rule does not apply to transfers off-site for recovery, recycling or reuse. Additional guidance is also given on salts of weak acids and bases and to distinguish among by-products, impurities and articles. Annual NPRI guidance manuals can be downloaded from the national NPRI web site in French and English at <http://www.ec.gc.ca/pdb/npri>.

Many facilities noted that the by-product reporting change resulted in significant increases in their 1995 NPRI reported releases and transfers. Many of the reported increases may not reflect actual increases in releases to the environment, but newly required reporting of a continuation of the same level of releases. Without contacting all facilities and asking each one to determine the effect of this reporting change on its data, it is not possible to quantify the overall effect on the 1995 or the 1996 NPRI data. Environment Canada identified several pollutants and sectors as likely to be affected by the by-product rule change, including methanol from pulp and paper mills, hydrochloric acid and sulfuric acid from utilities, carbon disulfide, and hydrogen fluoride from aluminum smelters. Two industrial sectors, utilities and aluminum smelters, are not part of the matched or multi-year data sets used for this report, and so will reduce the effect of the by-product change on analysis using these data sets. Nevertheless, readers are urged to keep the probable importance of this reporting change in mind when reviewing 1996 NPRI data or when comparing 1995 and 1996 NPRI data to 1994 NPRI data.

Changes that have previously been discussed and that will come into effect for the 1997 reporting year are: requiring a reason for transfer off-site for disposal, supplying an expanded set of reasons for why changes in releases/transfers were reported, qualitatively tracking pollution prevention activities, and voluntarily reporting a production ratio and an activity index that compares the current year's production level to that of the previous year. For the 1998 reporting year, the current voluntary reporting of reuse, recovery and recycling will become mandatory.

In 1998, Environment Canada invited a multistakeholder group to identify additions and deletions to the NPRI list, to identify substances warranting alternative reporting thresholds, and to develop an ongoing process for adding and deleting substances. In December 1998, the group released a draft report for public comment that proposed lists of substances to be added for the 1999 NPRI reporting year, a set of decision factors for additions, a process for deletions, and steps to add the inventory of criteria air pollutants to NPRI.

Of the 88 substances proposed for addition, approximately half are reported under TRI, which will increase the comparability between TRI and NPRI in future *Taking Stock* reports. Final decisions on substances to be added are expected in spring 1999.

In the future, the multistakeholder group will review alternate thresholds that may be appropriate for some chemicals, and the process for future additions and deletions. The group's report and other recent reports are available at Environment Canada's web site at <http://www.ec.gc.ca/pdb/npri>.

2.1.3 Current Status of the RETC in Mexico

Significant changes occurred in the development of the RETC program in 1998. For the 1997 reporting year, only releases to the air of six categories of criteria air pollutants (sulfur dioxide, nitrous oxides, particulates, carbon monoxide, carbon dioxide, and total hydrocarbons) from industries under federal jurisdiction were required to be reported. While the industries are manufacturing industries, criteria air pollutants and total hydrocarbons are not on the NPRI or the TRI list of substances. Reporting by a facility was further limited to only those substances regulated under existing individual permits.

About 500 facilities submitted a *Cédula de Operación* (Annual Certificate of Operation—COA) by the July 1998 deadline to the *Instituto Nacional de Ecología* (National Institute of Ecology—INE). Of these 500 facilities, approximately 10 percent submitted a voluntary section of the COA form (see **Section V** of **Appendix D**) with reports on other substances and/or releases and transfers to land and water.

A summary of the pilot project run in the state of Querétaro in 1996 in which industries volunteered to participate in reporting releases and transfers of the proposed RETC list of 178 substances was published. The results were presented in *Taking Stock 1995*. An English version of the final report on the pilot project provides data on releases of a number of chemicals and is available online from INE at <http://www.ine.gob.mx/retc/ingles/pilot.html>.

There are barriers to the implementation of the RETC. These include the lack of a consistent environmental policy for the management of hazardous substances (that is, different reporting requirements for substances) and the lack of a legal list of chemicals required to be reported. To achieve this legal list, a new process for defining criteria to select chemicals was started. Most of the previous work selecting chemicals on the basis of persistence, bioaccumulation and toxicity, which resulted in a list of 178 chemicals, was considered. In August 1998, INE presented a new proposal, *Procedures and Criteria for the Elaboration and Update of the List of Substances to Report in the RETC*. This is being reviewed by the National Committee on Standardization but this body lacks, at present, a legal framework from which it could issue a *Norma Oficial Mexicana* (Mexican Official Standard) making the list of RETC substances mandatory. Other areas still under discussion include the type of public access to the information with the data currently available only on an aggregated regional/municipal basis, rather than at the facility level.

To achieve greater compliance, a series of guidance manuals are being developed and workshops are being conducted to increase and improve the level of reporting. The manuals provide guidance on how to estimate releases. Previous environmental regulations under permitting programs required direct monitoring of releases whereas now estimation can be used as a cost saving measure for industry. Estimation is also available as an option under NPRI and TRI. Private companies are conducting workshops to train plant personnel on how to estimate and fill out the forms. A web site designed as support for industry has the forms, the estimation manuals, and a schedule for the training workshops (see <http://www.ine.gob.mx/retc/coa/indexcoa.html>).

2.2 Basic Similarities of PRTRs

As indicated in **Chapter 1**, the two North American PRTRs have the following basic similarities. PRTRs:

- provide an overview of releases and transfers of listed pollutants,
- report on individual chemicals,
- report by individual facilities,
- cover all environmental media,
- require periodic reporting,

- depend on defined and structured reporting,
- use computerized data management,
- limit trade secrecy,
- indicate what is being held as a trade secret, and
- result in the information actively disseminated to the public.

However, the Mexican RETC system, still under development, may have many but not all of these elements. For example, publicly available RETC information will be aggregated at the municipal, state and national levels, but not currently at the facility level, and the section of the reporting comparable to Canadian and US PRTR systems is currently voluntary.

2.2.1 Individual Chemicals

Each country in North America has developed its own list of substances, reflecting local conditions, scientific assessments and chemicals commonly in commerce. The TRI list for 1996 reporting consists of 608 chemicals, including 28 categories, compared to 176 including 16 categories on the NPRI list. A total of 165 substances, including 16 categories, are common to both lists. There are 178 substances, including 17 categories on the original RETC list that is now under review. A total of 78 of these, including 11 categories, are common to all three lists. For a detailed comparison of the chemical lists in the three countries, see **Appendix A**, "A Comparison of Chemicals Listed under the 1996 TRI, NPRI and proposed RETC."

TRI facilities report separately for certain chemicals and their compounds, while in NPRI, a chemical and its compounds count as one category. For example, TRI lists both lead and lead compounds, counting them as two separate substances, while NPRI lists the single category, lead and its compounds. All the analyses in *Taking Stock 1996* add the TRI amount reported for the given chemical to the amount reported for its compounds, to correspond with NPRI practice. The proposed RETC list also has nine substances that would be reported as the substance along with its compounds, as in NPRI.

2.2.2 Individual Facilities

Each country has different requirements that make a facility eligible for reporting. In the United States, all manufacturing and federal facilities that meet the threshold (see **Section 2.3.2**) must report; some additional industries will begin reporting for the 1998 reporting year. In Canada, any facility that meets the threshold must report. Canada exempts certain facilities, such as those involved with the distribution, storage or retail sale of fuels; agriculture, mining and oil and gas well drilling, if these facilities do not process or otherwise use the substances; research and training institutions; and transportation vehicle repair facilities. Mexico proposes to require any facility under federal jurisdiction to report. These include the following 15 industrial sectors: petroleum, petrochemical, chemical, paints and dyes, iron and steel, metal, automotive, cellulose, paper, cement, lime, asbestos, glass, electrical energy generation, and hazardous waste treatment.

2.2.3 Releases and Transfers

In their reports, facilities provide estimates of their on-site releases of the listed substances to the air, water and land and also by underground injection (except in Mexico, which does not employ this method of disposal). Facilities also estimate the amounts of the listed substance in waste that they transfer off-site. A transfer is the shipment of the substance in waste to a municipal sewage treatment plant or to another site for treatment or disposal or (in the case of the US TRI and the Mexican RETC) for recycling/recovery (see **Figure 2–1** and the box on p. 10). Tracking both releases and transfers is necessary to provide a full picture of the movements of chemicals. Each country has slightly different categories for releases and transfers, outlined in **Table 2–1** (pp. 11–12).

2.2.4 Trade Secrecy

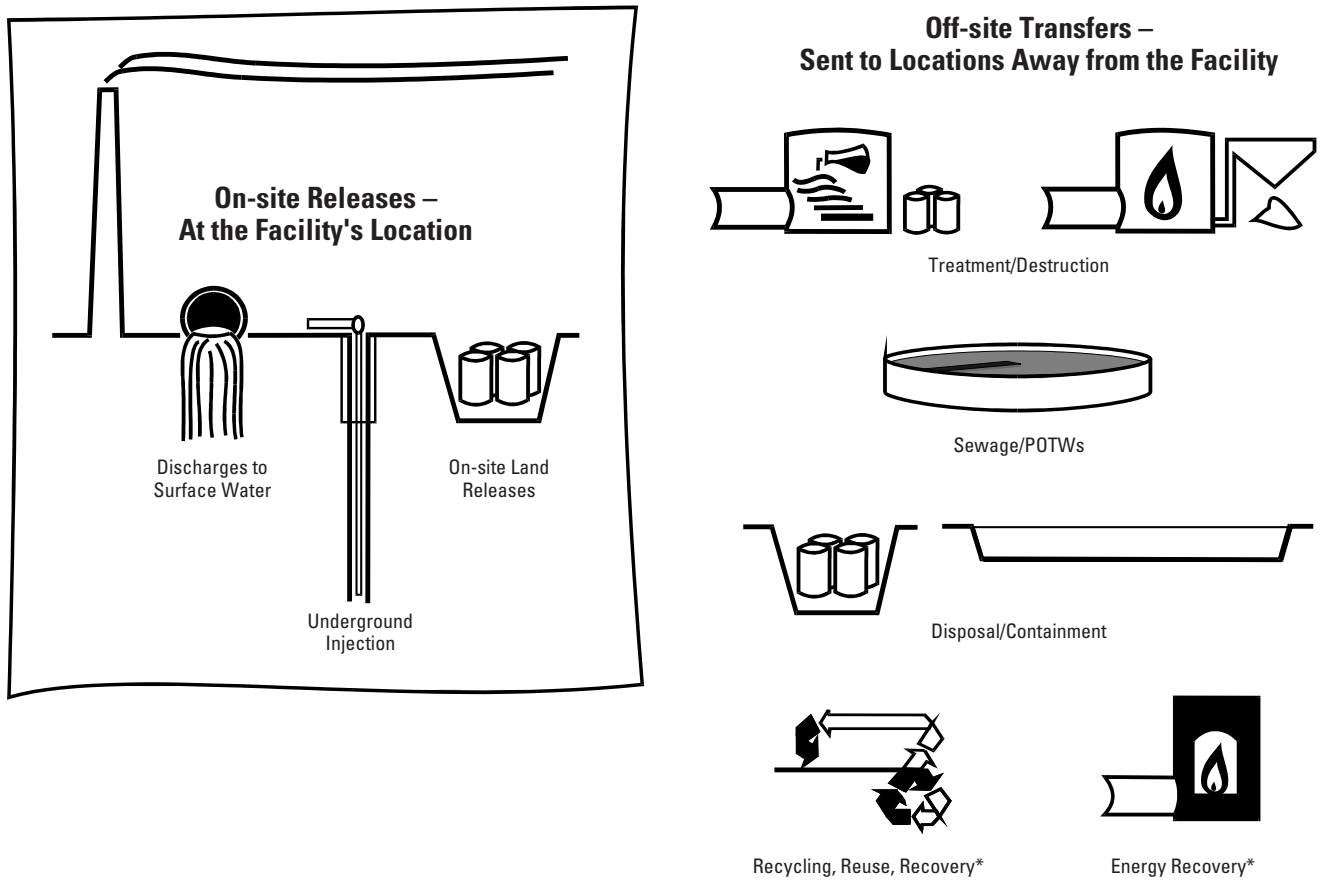
The purpose of the Canadian and US databases is to provide the public with data about chemicals in the environment, so in general, both databases limit the type of information that facilities can claim as secret and withhold from public information. In the United States, the only claim of trade secrecy that can be made is for the identity of the chemical. All data on release and transfer amounts are part of the database. Claiming trade secrecy is not widespread: only 13 TRI forms from 12 facilities, out of 71,381 submitted for 1996, contained such claims. The trade secrecy claims constitute 755 pounds (342 kg) of releases and 3,129 pounds (1,419 kg) of transfers. In Canada, all information in a report may be held confidential if it conforms to the criteria under the Federal Access to Information Act. According to the NPRI summary report, six facilities and 19 forms out of the national total of 6,635 forms were given confidential status for the 1996 NPRI reporting year. This represented 157,000 kg of releases and 3,217,000 kg of off-site transfers. Mexico is currently discussing criteria for trade secrecy.

2.2.5 Public Dissemination

As one of the purposes of the databases is to provide this information to the public, both TRI and NPRI are available in a variety of formats: annual summary reports, detailed data in hard and electronic form, and over the Internet (see **Section 2.4**). The level and detail of the information to be made public under the Mexican RETC is still under discussion. In the first annual report (1997 data), summary data on releases and transfers by industrial sector at the national, state and municipal level will be published. When data might be available to the public at the facility level has not been decided.

Figure 2–1
1996

On-site Releases and Off-site Transfers



* On-site recycling and energy recovery reported to TRI only.
Off-site recycling and energy recovery reporting voluntary in NPRI and mandatory in TRI.

On-site Releases and Off-site Transfers

(See also **Figure 2–1**, p. 9**)**

On-site Releases

On-site releases are the discharge of a pollutant to the environment at the site of the reporting facility. They include emissions to air, discharges to surface waters, releases to land and deep-well underground injection within the boundaries of the reporting facility.

On-site releases to air include emission from stacks, vents, ducts or pipes. Such emissions are often called point sources. Air emissions also occur as fugitive sources from equipment leaks, evaporative losses from surface impoundments and spills, and releases from building ventilation systems.

Surface water discharges include direct discharges to streams, rivers, lakes, oceans and other bodies of water. These are releases from contained sources such as industrial process outflow pipes or open trenches. Discharges due to runoff from the facility's boundaries, including storm water runoff, are also included.

Underground injection is the injection of fluids into known geological formations, generally at great depths.

On-site releases to land include disposal of wastes in landfills in which wastes are buried, land treatment (also called application farming) whereby a waste is applied to or incorporated into soil for biological degradation, and disposal in surface impoundments which are uncovered holding areas used to evaporate or settle waste materials.

These on-site release and disposal methods are regulated by the local municipality, state/provincial or federal agencies in each country.

Off-site Transfers

Off-site transfers consist of shipments of a listed pollutant in waste to an off-site location. The waste is sent for treatment prior to final disposal (this includes wastes sent to municipal sewage treatment plants) or for disposal at the off-site facility receiving the waste. Only the quantity of the listed chemical in the waste is reported to the PRTR. The amount sent to each site along with the name and address of the receiving facility is reported.

Off-site transfers to treatment may be treated in a variety of ways. Treatment methods include physical treatments such as separation or encapsulation, chemical treatment such as stabilization or neutralization, biological treatment such as bio-oxidation, incineration.

Transfers to municipal sewage treatment plants or publicly owned treatment works (POTWs) are wastewaters transferred through pipes or sewers to the facility owned by a municipality or other public body. The treatment or removal of the pollutant from the wastewater depends on the nature of the pollutant as well as the treatment methods present at the sewage treatment facility.

Transfers receiving off-site treatment do not necessarily constitute a release to the environment because the pollutant may be chemically or physically altered. The PRTR reports do not indicate how much, if any, of the pollutant is ultimately released.

Off-site transfers to disposal, however, include some of the same methods found on-site: disposal in landfills, land application farming, surface impoundments and underground injection.

Off-site transfers in waste are reported separately from on-site releases because their ultimate disposal will be in a different geographic location than that of the reporting facility and the waste becomes the responsibility of the receiving facility. They are reported to provide more complete information on the waste generated by the facility and the fate of the pollutant.

Table 2–1
1996

Comparison of Mandatory Reporting in North American PRTRs

Major Data Elements	US Toxics Release Inventory (TRI)	Canadian National Pollutant Release Inventory (NPRI)	Mexican *Registro de Emisiones y Transferencia de Contaminantes* (RETC)
Identification			
Type of facilities reporting	Manufacturing and federal facilities. (Additional sectors beginning 1998.)	Any facility manufacturing or using a listed chemical, except research, repair and retail sales. Also, agriculture, mining, well drilling excepted, but not if process or otherwise use the substance.	Any facility under federal jurisdiction.
Industry classification	All US SIC codes applicable to facility operations.	One primary SIC code per facility. Facility reports both Canadian and US SIC code.	One CMAP code per facility.
List of chemicals	Chemicals manufactured or processed or used in manufacturing (606 substances and 28 chemical categories).	Chemicals used or manufactured in sufficient quantities (176 substances includes 16 categories).	Six criteria air pollutants, for which a facility has a permit, are mandatory.
Reporting Threshold			
Number of employees	10 or more.	10 or more.	No threshold.
Activity/use of chemicals	Manufacture/process more than 25,000 pounds (11,338 kg) or use more than 10,000 pounds (4,535 kg).	Manufacture, process or use10 tonnes (10,000 kg) or more.	No threshold. However, only substances for which a facility has a permit for air emissions must be reported.
Concentration of chemicals in mixtures	Concentrations equal to or greater than 1 percent (0.1 percent for carcinogens) count toward activity/use threshold.	Concentrations equal to or greater than 1 percent plus total weight of by-products count toward activity/use threshold.	No threshold.
Type of Data Reported			
Units	Pounds reported; based on estimates.	Tonnes reported; based on estimates.	Facilities may report in their own units. RETC will convert to tonnes.
Small quantity reporting	Amounts for releases/transfers less than 1,000 pounds (502 kg) may be reported by range code; no amounts need be reported if total production-related waste does not exceed 500 pounds (227 kg) and manufacture, process or use does not exceed 1 million (502 tonnes).	Total releases less than 1 tonne (1,000 kg) reported as total releases only. Releases to each medium less than 1 tonne (1,000 kg) reported by range code.	No different provisions for small-quantity reporting.
Releases			
Air emissions	Fugitive and point source emissions reported separately; includes spills and leaks.	Fugitive, point source, storage/handling, spills, or other emissions reported separately.	Air emissions from production processes and from non-production-related processes reported separately by emission point. Amount from spills not included. Only air emissions permit substances reported.
Surface water discharges	Amount to each water body reported (includes spills and leaks in amount). Percentage due to stormwater reported.	Amount of discharge, spills, and leaks to each water body. (Reporting of amounts separately for each water body began with 1996 reporting year.)	Not mandatory.

[Table continues on next page.]

Table 2–1 (cont.)
1996

Comparison of Mandatory Reporting in North American PRTRs

Major Data Elements	US Toxics Release Inventory (TRI)	Canadian National Pollutant Release Inventory (NPRI)	Mexican *Registro de Emisiones y Transferencia de Contaminantes* (RETC)
Releases, cont.			
On-site land releases	Amount to hazardous waste landfills, other on-site landfills, land treatment/application, surface impoundments reported separately. Spills and leaks included. (Reporting of categories for landfills—hazardous waste and all other—began with 1996 reporting year.)	Amount to landfills, land treatment/ application, spills, leaks; other reported separately.	Not mandatory.
Underground injection	Amount to on-site Class I wells and all other wells. Amount from spills included. (Amount to Class I wells reported separately from amount to all other wells began with 1996 reporting year.)	Amount to on-site wells. Amount from spills included.	Underground injection not practiced in Mexico.
Accidental spills	Included in release and transfer amounts. In different section of form reported as one amount.	Reported separately under air, water and on-site land releases. Included in underground injection and transfer amounts.	Not mandatory.
Transfers			
Transfers to municipal sewage	Total amount reported. List name/address of each municipal sewage treatment plant.	Total amount reported to each sewage treatment plant along with name/address of each municipal sewage treatment plant. (Reporting of separate amounts to each sewage plant began with 1996 reporting year.)	Not mandatory.
Other off-site transfers	Amount reported by method of treatment/ disposal; amount reported for each transfer location with name/address.	Amount reported by method of treatment/ disposal; amount reported for each transfer location with name/address. (Reporting of separate amounts to each transfer location began with 1996 reporting year.)	Not mandatory.
Chemicals in Waste			
Waste management by treatment/ disposal	Amount managed on-site and off-site by type of management.	Off-site transfers only.	Not mandatory.
Recycling/reuse/recovery	Amount managed on-site and off-site by type of waste management.	Not mandatory. (Mandatory reporting of off-site transfers only starting in1998 reporting year.)	Not mandatory.
Other Data Elements			
Type of on-site waste treatment	Type for each method used by type of wastestream (separate amounts not reported).	Not reported.	Not mandatory.
Projections	Two years following, amounts for on-site and off-site waste management.	Three years following, additional two years optional, for total releases and total transfers.	Not mandatory.
Source reduction	Type of source reduction activities (21 categories).	Not reported.	Not mandatory.

2.3 Differences in the PRTR Databases

The three PRTR systems also have important differences. They differ in:

- substances reported,
- types of facilities covered,
- release and transfer categories,
- reporting thresholds,
- industrial classification system,
- classification of small releases,
- requirements for reporting on source reduction,
- requirement for mandatory reporting, and
- public access to information.

Appendix A lists the chemicals in each PRTR, and **Table 2–1** (pp. 11–12) indicates the major differences in the types of facilities required to report and in the categories of releases and transfers. These differences also affect the way the data are presented. When data from the PRTRs are compiled for comparison, these differences are addressed by selecting subsets of data that are comparable across the PRTRs, as explained below. Other differences cannot readily be resolved in this manner, and further details about them are provided here, as they must be kept in mind when interpreting the data presented in this report.

2.3.1 Matching Data across PRTRs

To compare data from PRTRs with different requirements, this report relies on selecting the comparable elements. The data are from Canada and the United States; the Mexican system is being implemented and data are not available for 1996. **Chapter 3** presents summary tables for 1996 and 1995–1996 to demonstrate the method used to select comparable data sets.

In practice, a matched data set limits the analysis to the manufacturing sector, because non-manufacturing facilities were not required to report to TRI. Chemicals may also be reportable in both systems, but defined differently. For sulfuric acid and hydrochloric acid, for example, the TRI definition has changed so that only aerosol forms are reportable; these are released only to air. All forms of these acids are still reportable to NPRI. For comparing TRI and NPRI data, then, the matched data set includes only air emissions of these two chemicals.

In addition, while ammonia and isopropyl alcohol appear on both lists, they are not included in the matched data set because the definition for these substances differs. Total ammonia is reportable to NPRI, while only 10 percent of aqueous forms of ammonia, along with all anhydrous forms, are reportable to TRI. Only forms of isopropyl alcohol manufactured by the strong acid process are reportable to TRI, while all forms are reportable to NPRI. The matched data set also excludes any substance on one list but not the other.

Environment Canada considers 1995 as a base year for NPRI, and EPA considers 1988 as a base year for TRI. Therefore, **Chapter 6**, which compares PRTR across the years, looks at 1995 and 1996 data. The chemicals and industries matched for 1995–1996 are the same as those used for 1996 only.

To help clarify the differences in the matched data set and the entire set of data as reported to each country, **Chapter 3** presents summary tables from the 1996 matched data set, the 1996 complete databases, and the 1995–1996 matched data set. Throughout *Taking Stock 1996*, letters (M = matched chemicals/industries for 1995 and 1996 or A = all chemicals/industries) on the left sides of the tables and figures, state which data set is in use. Only tables and figures based on the same data set can be meaningfully compared with one another.

2.3.2 Thresholds

One of the major differences among the databases is the reporting threshold: the amount of a given substance that can be manufactured or used in the facility before reporting is required. If the threshold is met or exceeded, then all releases and transfers must be reported. In the United States, if more than 25,000 pounds (11.34 tonnes) of a chemical is manufactured or processed or if more than 10,000 pounds (4.54 tonnes) is "otherwise used," then releases and transfers must be reported. In Canada, if 10 tonnes (22,050 pounds) or more of the substance is manufactured, processed or "otherwise used," then releases and transfers must be reported. Both systems require reporting for facilities that employ the equivalent of 10 or more full-time employees.

As explained in **Section 2.1.2** above, for the 1995 and subsequent reporting years, Canada, as does the United States, requires that the total weight of the by-product, regardless of concentration, be included in the calculation of the reporting threshold, eliminating one difference between the two systems.

The other major difference in threshold requirements between TRI and NPRI is the amount of the substance in a mixture. Both countries require reporting if this amount equals or exceeds one percent by weight. However, the United States has an additional lower threshold for carcinogenic chemicals: chemicals identified as carcinogens by the Occupational Safety and Health Administration (OSHA) standard must be reported at levels of 0.1 percent.

The net effect of these differences in threshold is that, in general, US facilities will meet the threshold at slightly lower levels of chemical activity/use than Canadian ones. The Mexican RETC does not have reporting thresholds by amount of substance, number of employees or any other kind.

2.3.3 Industrial Classification System

Facilities are classified according to the type of industrial operations they carry out. This allows both the determination that they are required to report as well as comparisons among industrial sectors. All three countries require that facilities report using a type of industrial classification system, but these systems differ among the countries. Both the United States and Canada use a "Standard Industrial Classification" system, such that industries are identified by their "SIC code." These systems, however, are not the same. The Mexican RETC uses the Mexican Activities and Products Classification (CMAP code—*Clasificación Mexicana de Actividades y Productos*), which is different yet again.

Fortunately for comparison purposes, Canada supplies facilities with a table that correlates Canadian SIC codes to their US equivalents and requires each facility to report both the Canadian and the US SIC code that characterizes the majority of its operations. This is essential to comparing the NPRI and TRI data, because otherwise, there is no direct correspondence between the two SIC code systems.

The United States, Canada and Mexico are working together to develop a common North American Industry Classification System (NAICS) that, if used, will

allow more far-reaching comparisons in the future. In reporting year 1998, NPRI facilities will begin reporting their NAICS code, along with the Canadian and US SIC codes. TRI is expected to to implement the NAICS for reporting year 2000. The Mexican RETC will use the NAICS code starting for the reporting 1998. Information on NAICS is available from Statistics Canada on the Internet at <http://www.statcan.ca/english/Subjects/Standard/index.htm>. The US government has information on NAICS at <http://www.ntis.gov/yellowbk/1nty205.htm>. For information on NAICS in English, see the INEGI English-language web site at <http://www.inegi.gob.mx/homeing/estadistica/scian/scian.html>.

2.3.4 Reporting of Small Releases

For releases of a substance that total less than one tonne, NPRI allows a facility to report just the total amount released and not the amounts in individual release categories by environmental medium. Therefore, in summary tables in this report, total releases will be more than the sum of the separate release categories. In contrast, the amounts of the individual releases for each medium are reported in TRI. Both NPRI and TRI require reporting of the amounts of individual types of transfers.

Beginning in 1995, EPA added a reduced reporting option for facilities that meet the reporting thresholds, but whose total "reportable amount" for the year does not exceed 500 pounds (227 kilograms) in production-related waste. This amount includes releases and transfers, plus waste that is managed on site. A further restriction is that the facility may not manufacture, process or otherwise use one million pounds (453 tonnes) or more of the substance during the year. These facilities may submit a "certification" form (called Form A) that identifies the chemical reported, but contains no information on amounts. These forms are counted in the database with releases and transfers set to zero.

Finally, both NPRI and TRI offer the option to report a range for the smallest releases. In this report, the midpoint of the range is used as the estimate for the amount of release in these cases.

2.3.5 Source Reduction

The United States requires facilities to identify the types of source reduction activities they have undertaken during the reporting year. Following consultations in 1996, qualitative reporting of pollution prevention activities to NPRI will be required for the 1997 and subsequent reporting years. Facilities must select one or more of nine possible actions to describe any source reduction activities taking place at the facility. The Mexican RETC does not have reporting on this information.

2.4 PRTR Contacts for Further Information

PRTR data and summaries are available free of charge. Boxes on the next page give contact telephone numbers and Internet sites for obtaining PRTR information in the three countries.

Public Access to NPRI Data and Information

Information on NPRI, the annual report and the databases can be obtained from Environment Canada's national office:

Headquarters: 819-953-1656 819-994-3266 (fax)

Environment Canada on the Internet:
<http://www.ec.gc.ca>

NPRI data on the Internet:
<http://www.ec.gc.ca/pdb/npri>

e-mail: npri@ec.gc.ca

Additional Information on Mexican RETC

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Semarnap on the Internet:
<http://www.semarnap.gob.mx>

INE's web page site for RETC on the Internet:
<http://www.ine.gob.mx/retc/retc.html>

Other web sites address RETC activities, including:
1) <http://www.laneta.apc.org/emis/sustanci/retc/retc.htm> by the nongovernmental organization LaNeta, and
2) <http://www.cespedes.org.mx/sistemas/industria/retc.html> by the industrial organization Enterprises Coordination Council

Public Access to TRI Data and Information

The EPA's TRI User Support (TRI-US) (800-424-9346 within the United States or 202-260-1531) provides TRI technical support in the form of general information, reporting assistance, and data requests.

EPA on the Internet:
<http://www.epa.gov>

TRI information and selected data on the Internet:
<http://www.epa.gov/opptintr/tri>

Online Data Access

1) EPA's Envirofacts:
<http:/www.epa.gov/enviro/html/tris/tris_overview.html>

2) Right-to-Know Network (RTK-NET):
<http://www.rtk.net> for Internet access
202-234-8570 for free on-line access to TRI data, or
202-234-8494 for information.

3) National Library of Medicine's Toxnet computer system:
<toxnet@tox.nlm.nih.gov>
<http://www.nlm.nih.gov/pubs/factsheets/trifs.html> for information

4) Environmental Defense Fund Scorecard on the Internet:
<http://www.scorecard.org>